FIG. 1

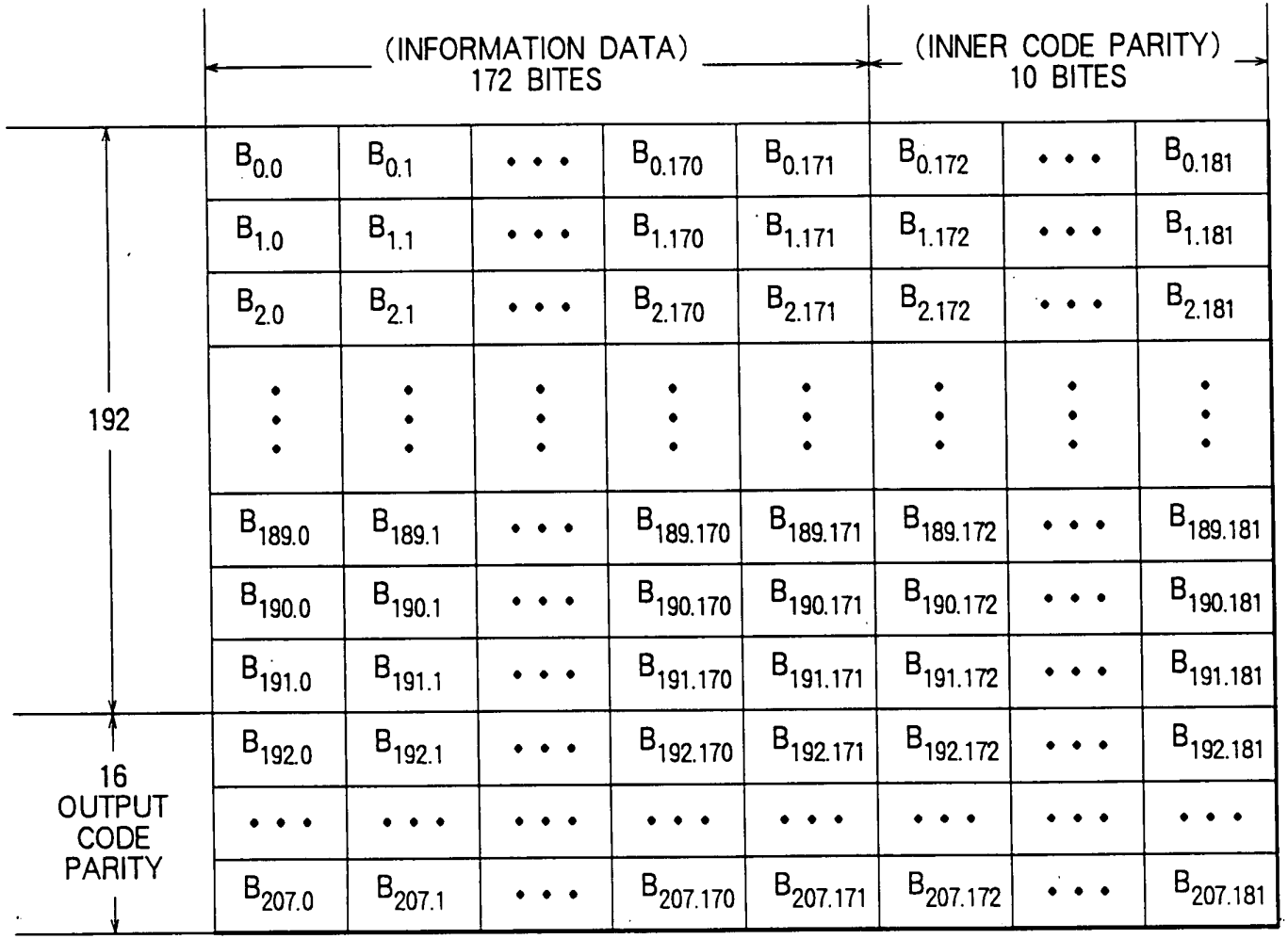

(INFORMATION DATA)
172 BITES
(INNER CODE PARITY)
10 BITES
192
16
OUTPUT
CODE
PARITY
$B_{0.0}$ $B_{0.1}$ ... $B_{0.170}$ $B_{0.171}$ $B_{0.172}$ ... $B_{0.181}$
$B_{1.0}$ $B_{1.1}$ ... $B_{1.170}$ $B_{1.171}$ $B_{1.172}$ ... $B_{1.181}$
$B_{2.0}$ $B_{2.1}$ ... $B_{2.170}$ $B_{2.171}$ $B_{2.172}$ ... $B_{2.181}$
$B_{189.0}$ $B_{189.1}$ ... $B_{189.170}$ $B_{189.171}$ $B_{189.172}$ ... $B_{189.181}$
$B_{190.0}$ $B_{190.1}$ ... $B_{190.170}$ $B_{190.171}$ $B_{190.172}$ ... $B_{190.181}$
$B_{191.0}$ $B_{191.1}$ ... $B_{191.170}$ $B_{191.171}$ $B_{191.172}$ ... $B_{191.181}$
$B_{192.0}$ $B_{192.1}$ ... $B_{192.170}$ $B_{192.171}$ $B_{192.172}$ ... $B_{192.181}$
$B_{207.0}$ $B_{207.1}$ ... $B_{207.170}$ $B_{207.171}$ $B_{207.172}$ ... $B_{207.181}$

FIG. 2

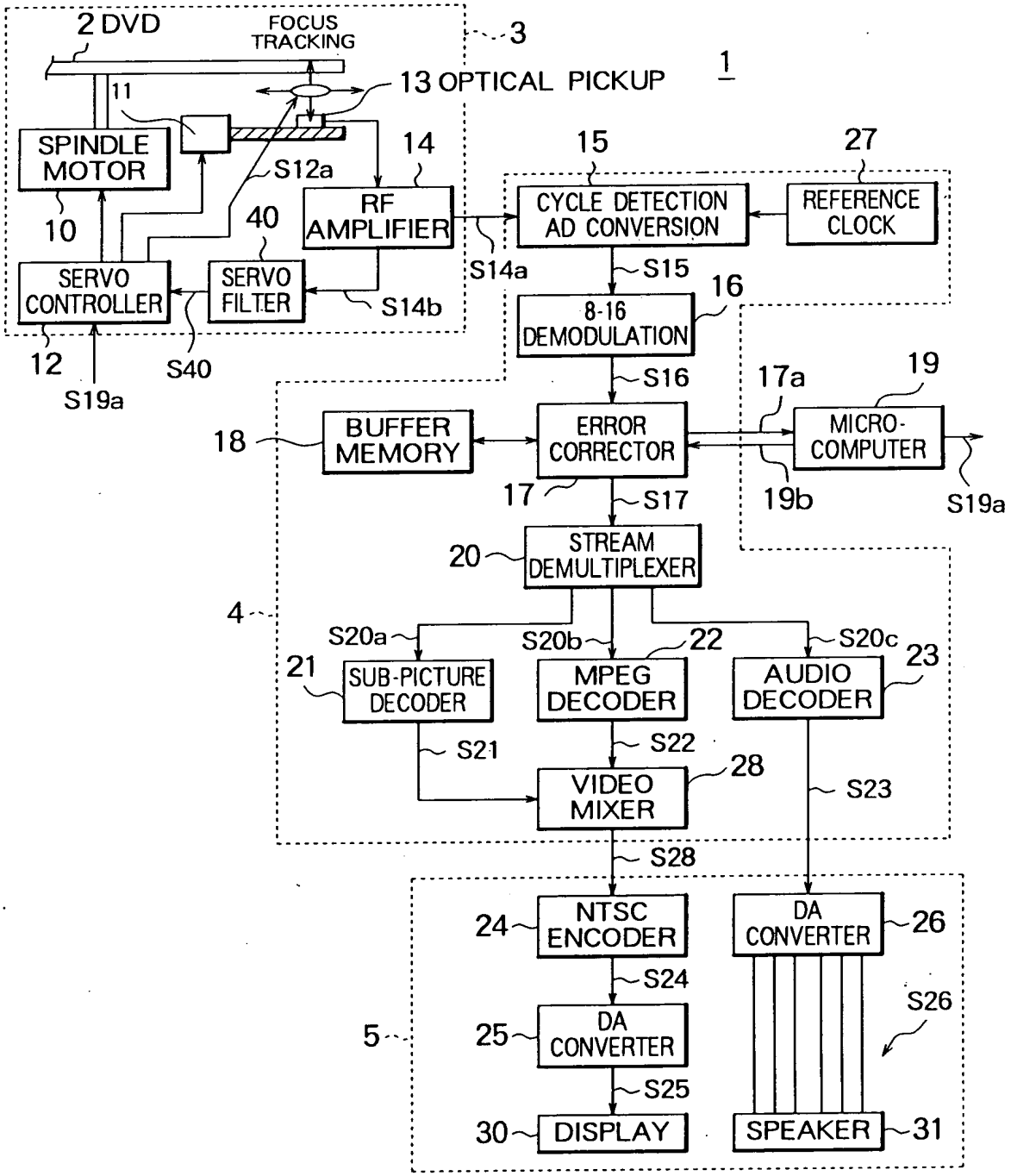

2 DVD
FOCUS
TRACKING
3
13 OPTICAL PICKUP
1
11
SPINDLE MOTOR
10
S12a
14
RF AMPLIFIER
40
SERVO CONTROLLER
SERVO FILTER
S14b
12
S40
S19a
S14a
15
CYCLE DETECTION AD CONVERSION
27
REFERENCE CLOCK
S15
16
8-16 DEMODULATION
S16
17a
19
18
BUFFER MEMORY
ERROR CORRECTOR
MICRO-COMPUTER
19b
S19a
17
S17
20
STREAM DEMULTIPLEXER
4
S20a
S20b
22
S20c
23
21
SUB-PICTURE DECODER
MPEG DECODER
AUDIO DECODER
S21
S22
28
VIDEO MIXER
S23
S28
24
NTSC ENCODER
DA CONVERTER
26
S24
S26
5
25
DA CONVERTER
S25
30
DISPLAY
SPEAKER
31

FIG. 3

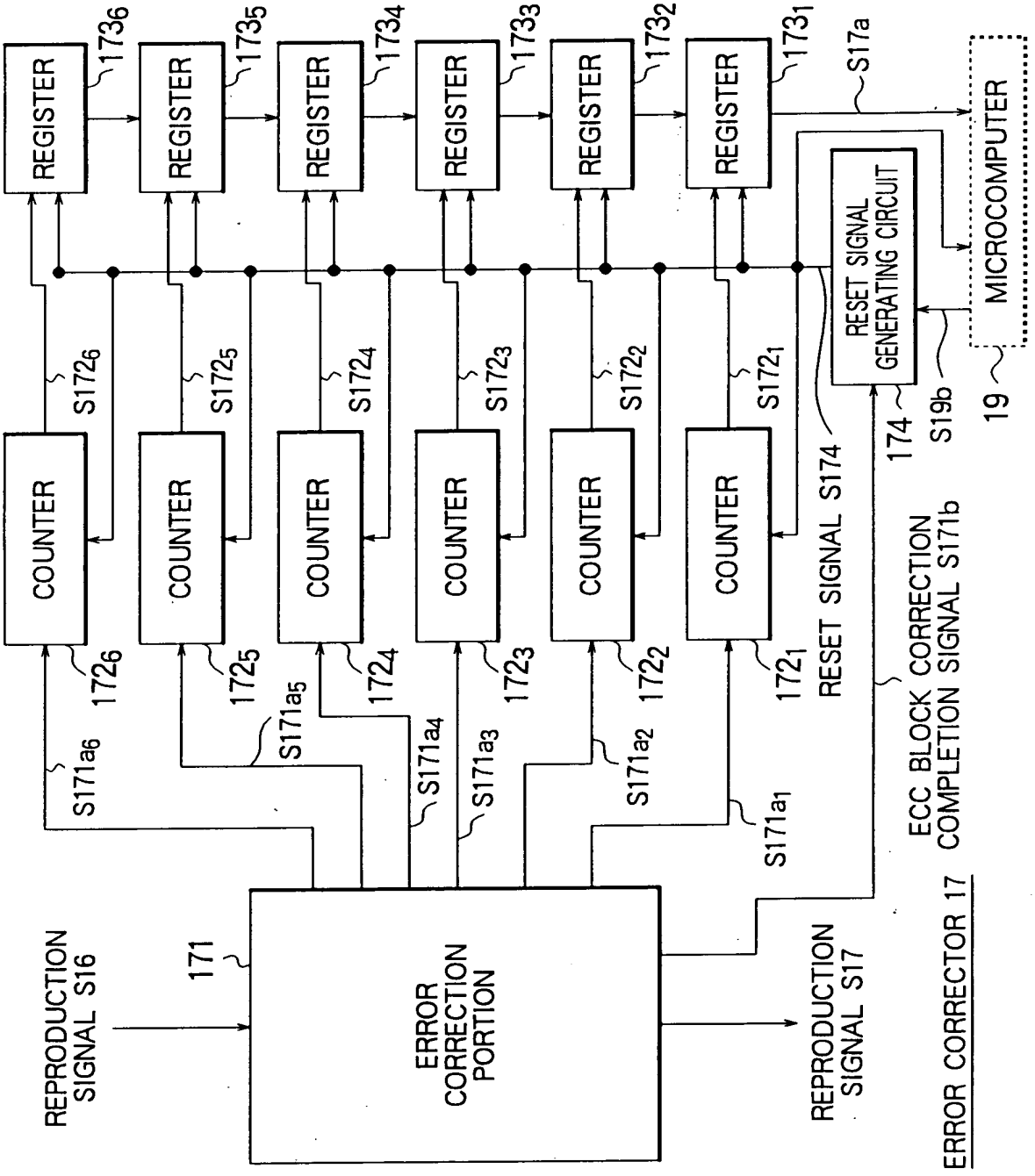

REGISTER
173_6
173_5
173_4
173_3
173_2
173_1
S17a
COUNTER
172_6
172_5
172_4
172_3
172_2
172_1
$S172_6$
$S172_5$
$S172_4$
$S172_3$
$S172_2$
$S172_1$
RESET SIGNAL GENERATING CIRCUIT
174
S19b
MICROCOMPUTER
19
RESET SIGNAL S174
ECC BLOCK CORRECTION COMPLETION SIGNAL S171b
$S171a_6$
$S171a_5$
$S171a_4$
$S171a_3$
$S171a_2$
$S171a_1$
REPRODUCTION SIGNAL S16
171
ERROR CORRECTION PORTION
REPRODUCTION SIGNAL S17
ERROR CORRECTOR 17

FIG. 4

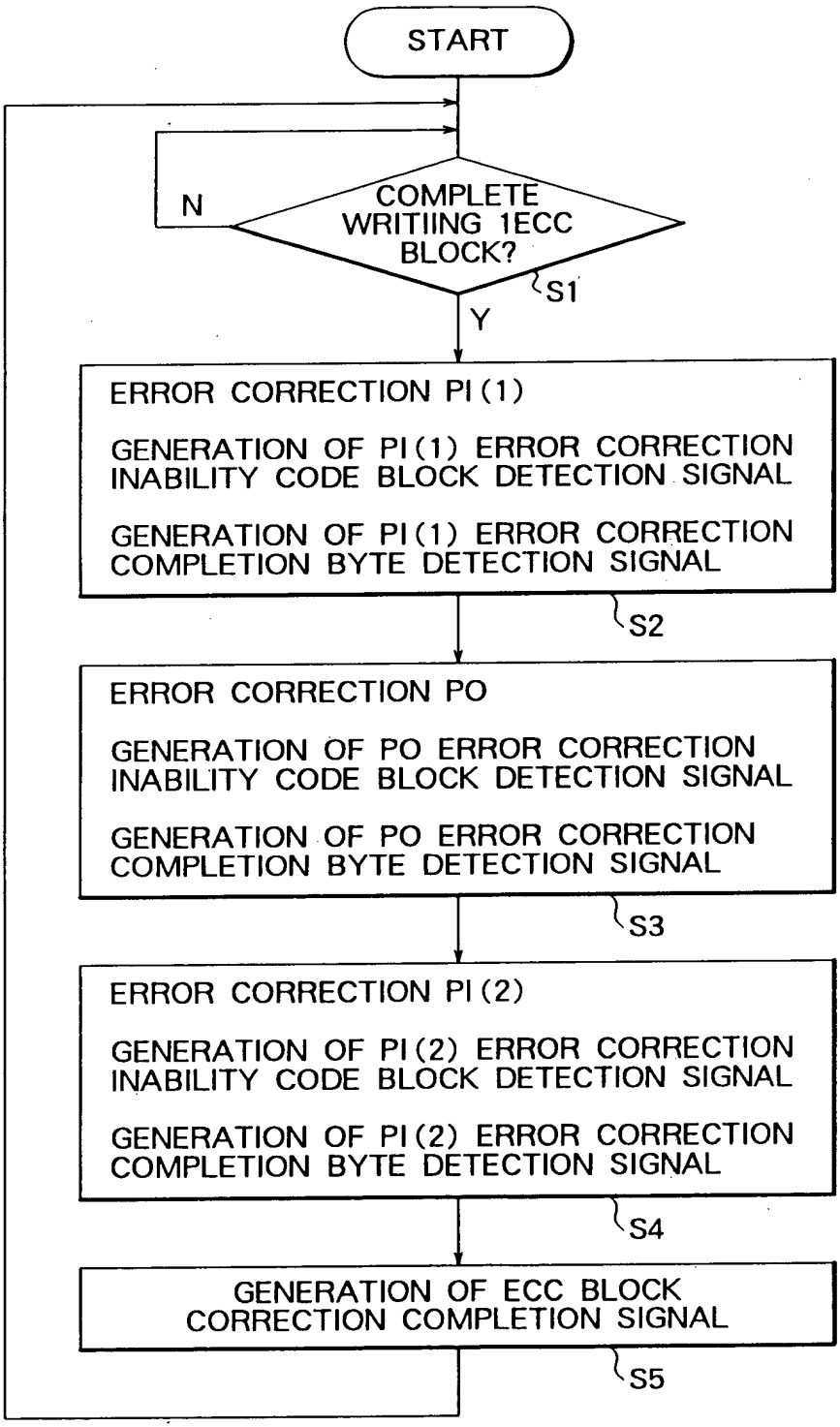

START
N
COMPLETE WRITIING 1ECC BLOCK?
S1
Y
ERROR CORRECTION PI(1)
GENERATION OF PI(1) ERROR CORRECTION INABILITY CODE BLOCK DETECTION SIGNAL
GENERATION OF PI(1) ERROR CORRECTION COMPLETION BYTE DETECTION SIGNAL
S2
ERROR CORRECTION PO
GENERATION OF PO ERROR CORRECTION INABILITY CODE BLOCK DETECTION SIGNAL
GENERATION OF PO ERROR CORRECTION COMPLETION BYTE DETECTION SIGNAL
S3
ERROR CORRECTION PI(2)
GENERATION OF PI(2) ERROR CORRECTION INABILITY CODE BLOCK DETECTION SIGNAL
GENERATION OF PI(2) ERROR CORRECTION COMPLETION BYTE DETECTION SIGNAL
S4
GENERATION OF ECC BLOCK CORRECTION COMPLETION SIGNAL
S5

FIG. 5

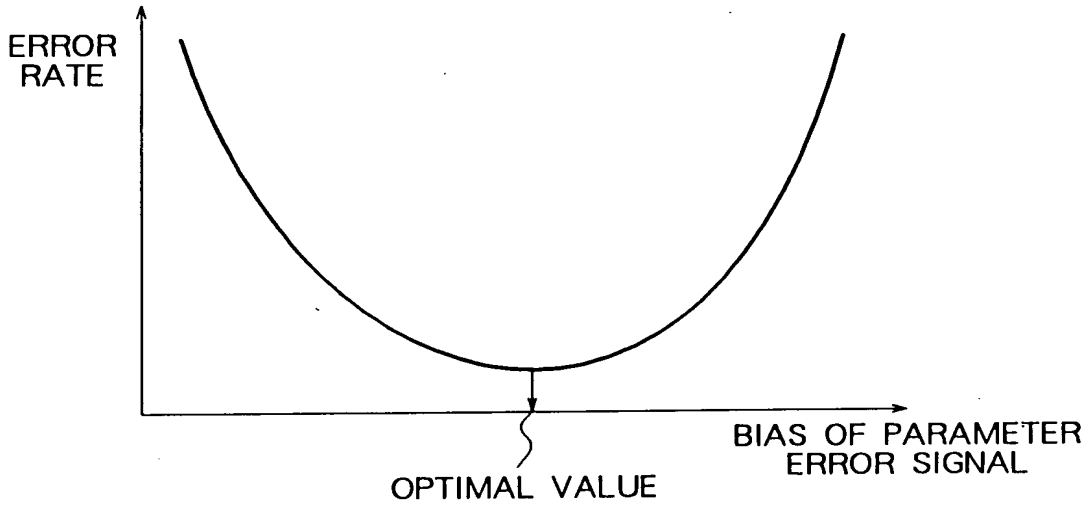


FIG. 6

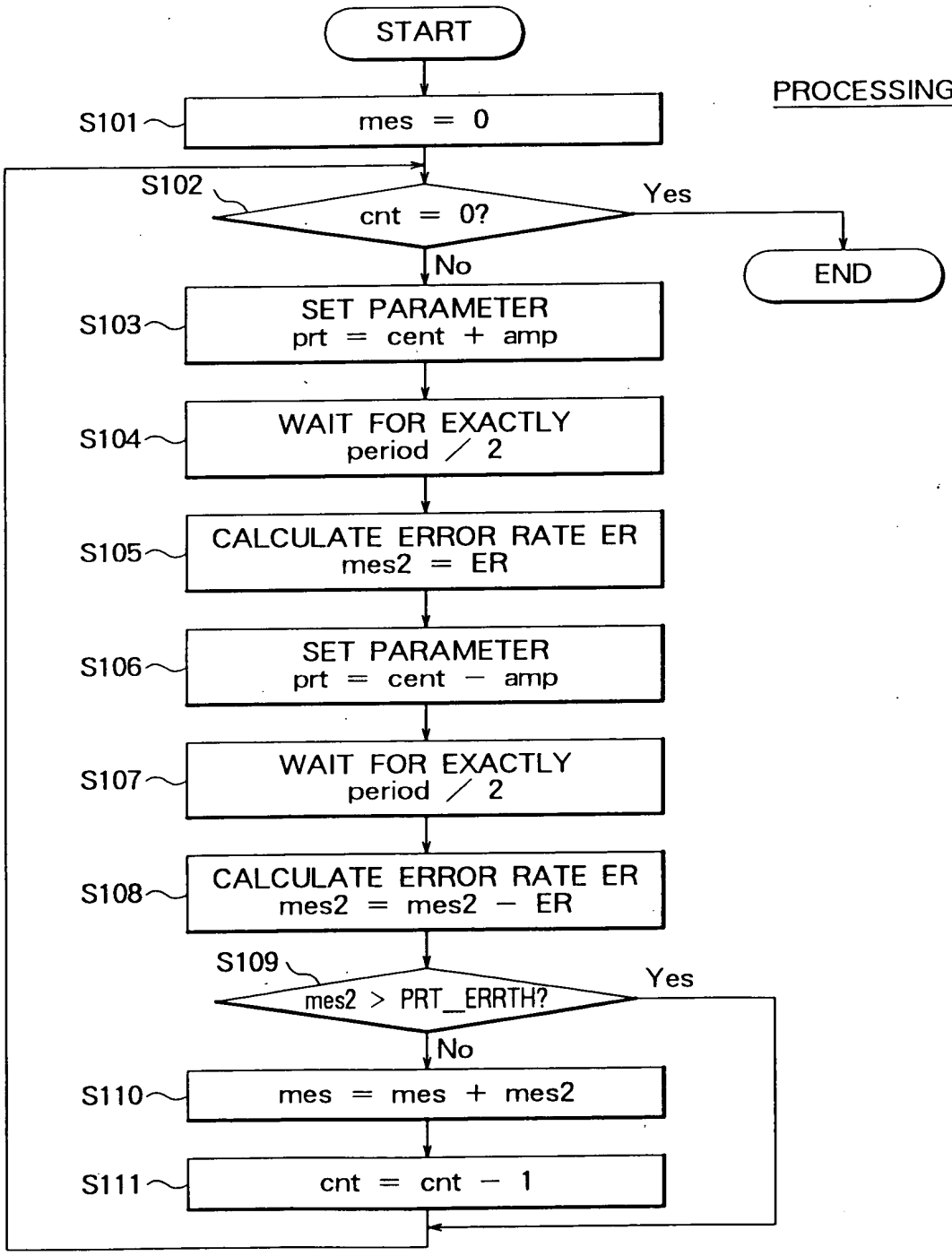

START
PROCESSING OF 19
S101
mes = 0
S102
cnt = 0?
Yes
END
No
S103
SET PARAMETER
prt = cent + amp
S104
WAIT FOR EXACTLY
period / 2
S105
CALCULATE ERROR RATE ER
mes2 = ER
S106
SET PARAMETER
prt = cent − amp
S107
WAIT FOR EXACTLY
period / 2
S108
CALCULATE ERROR RATE ER
mes2 = mes2 − ER
S109
mes2 > PRT_ERRTH?
Yes
No
S110
mes = mes + mes2
S111
cnt = cnt − 1

FIG. 7

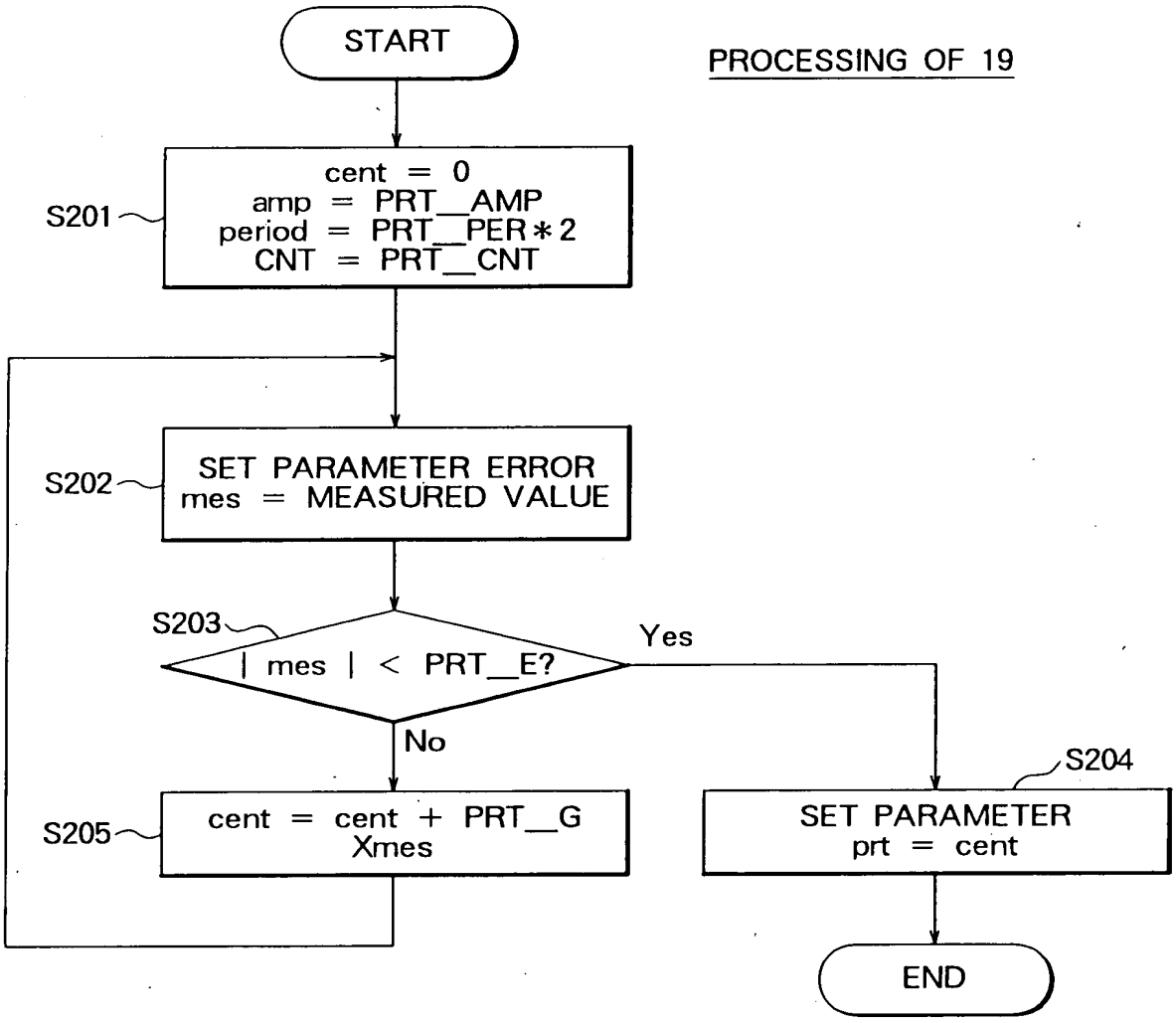

START
PROCESSING OF 19
S201
cent = 0
amp = PRT__AMP
period = PRT__PER*2
CNT = PRT__CNT
S202
SET PARAMETER ERROR
mes = MEASURED VALUE
S203
| mes | < PRT__E?
Yes
No
S204
SET PARAMETER
prt = cent
S205
cent = cent + PRT__G
Xmes
END

FIG. 8

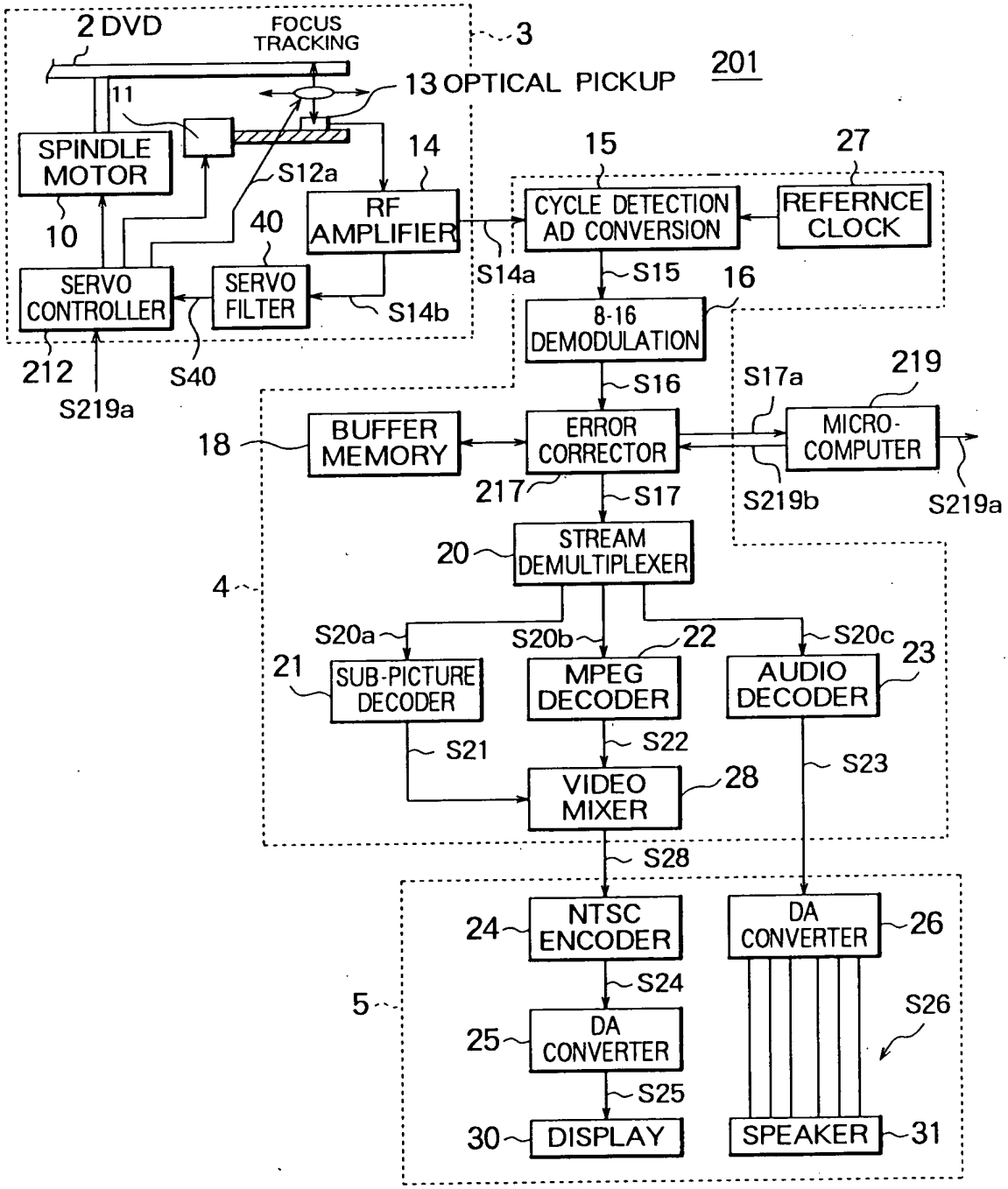

2 DVD
FOCUS
TRACKING
3
13 OPTICAL PICKUP
201
11
SPINDLE MOTOR
10
S12a
14
RF AMPLIFIER
40
15
CYCLE DETECTION AD CONVERSION
27
REFERNCE CLOCK
S14a
S15
16
SERVO CONTROLLER
SERVO FILTER
S14b
8-16 DEMODULATION
212
S219a
S40
S16
S17a
219
18
BUFFER MEMORY
ERROR CORRECTOR
MICRO-COMPUTER
217
S17
S219b
S219a
20
STREAM DEMULTIPLEXER
4
S20a
S20b
22
S20c
21
SUB-PICTURE DECODER
MPEG DECODER
AUDIO DECODER
23
S21
S22
S23
VIDEO MIXER
28
S28
24
NTSC ENCODER
DA CONVERTER
26
S24
5
S26
25
DA CONVERTER
S25
30
DISPLAY
SPEAKER
31

FIG. 9

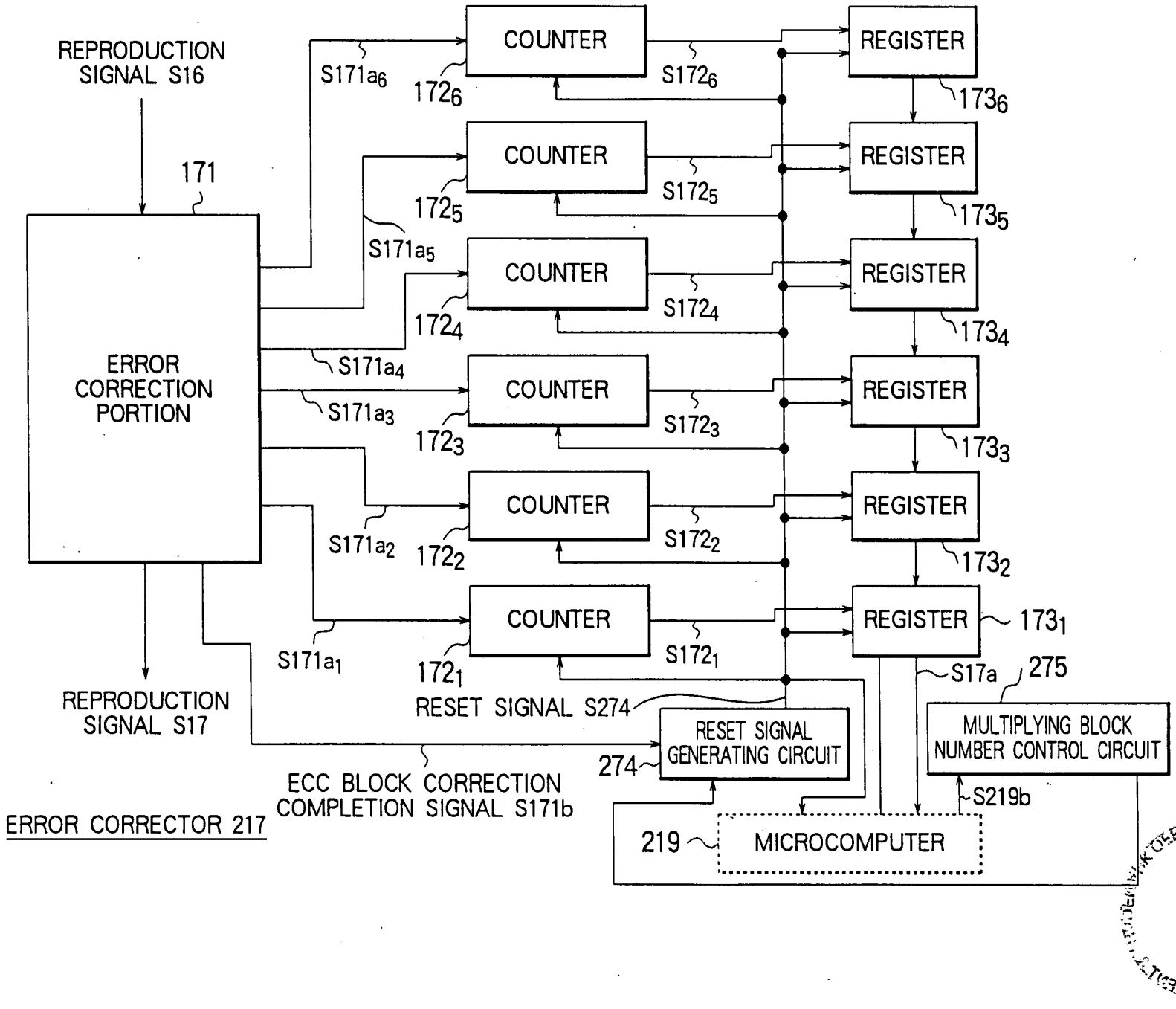

REPRODUCTION SIGNAL S16
171
ERROR CORRECTION PORTION
REPRODUCTION SIGNAL S17
ERROR CORRECTOR 217
S171a6
S171a5
S171a4
S171a3
S171a2
S171a1
1726
1725
1724
1723
1722
1721
COUNTER
S1726
S1725
S1724
S1723
S1722
S1721
REGISTER
1736
1735
1734
1733
1732
1731
S17a
275
RESET SIGNAL S274
274
RESET SIGNAL GENERATING CIRCUIT
MULTIPLYING BLOCK NUMBER CONTROL CIRCUIT
S219b
219
MICROCOMPUTER
ECC BLOCK CORRECTION COMPLETION SIGNAL S171b

FIG. 10

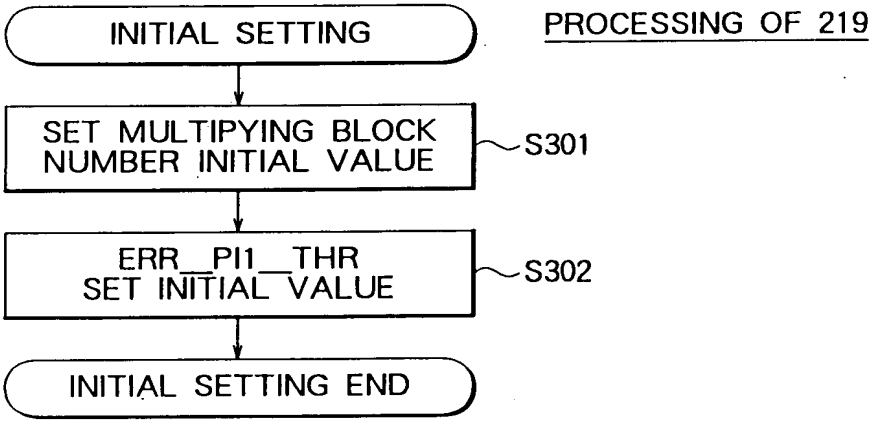

INITIAL SETTING
PROCESSING OF 219
SET MULTIPYING BLOCK NUMBER INITIAL VALUE
S301
ERR_PI1_THR SET INITIAL VALUE
S302
INITIAL SETTING END

FIG. 11

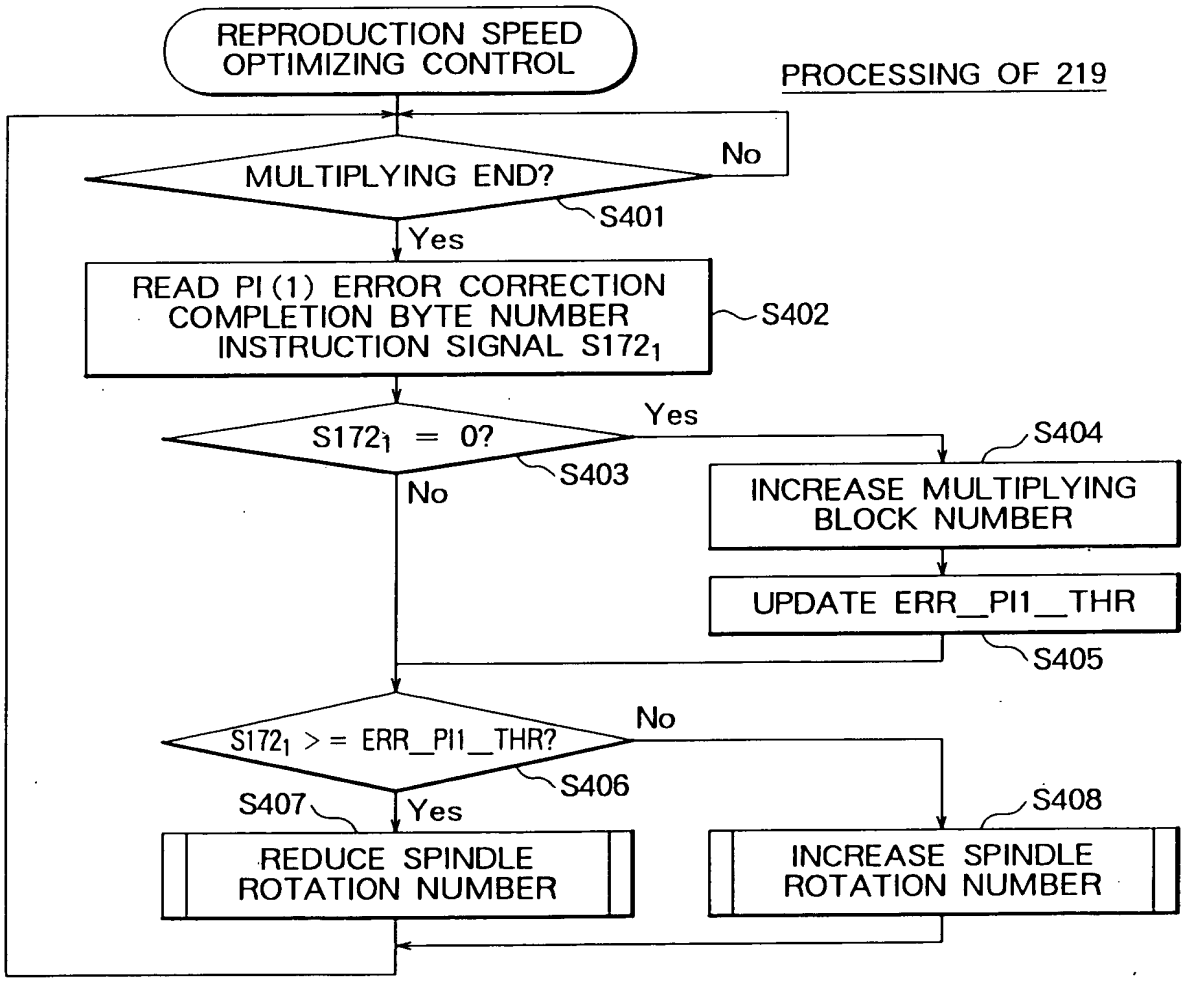

REPRODUCTION SPEED OPTIMIZING CONTROL
PROCESSING OF 219
MULTIPLYING END?
No
S401
Yes
READ PI(1) ERROR CORRECTION COMPLETION BYTE NUMBER INSTRUCTION SIGNAL S172$_1$
S402
S172$_1$ = 0?
Yes
S403
No
S404
INCREASE MULTIPLYING BLOCK NUMBER
UPDATE ERR_PI1_THR
S405
S172$_1$ >= ERR_PI1_THR?
No
S406
S407
Yes
S408
REDUCE SPINDLE ROTATION NUMBER
INCREASE SPINDLE ROTATION NUMBER

FIG. 12

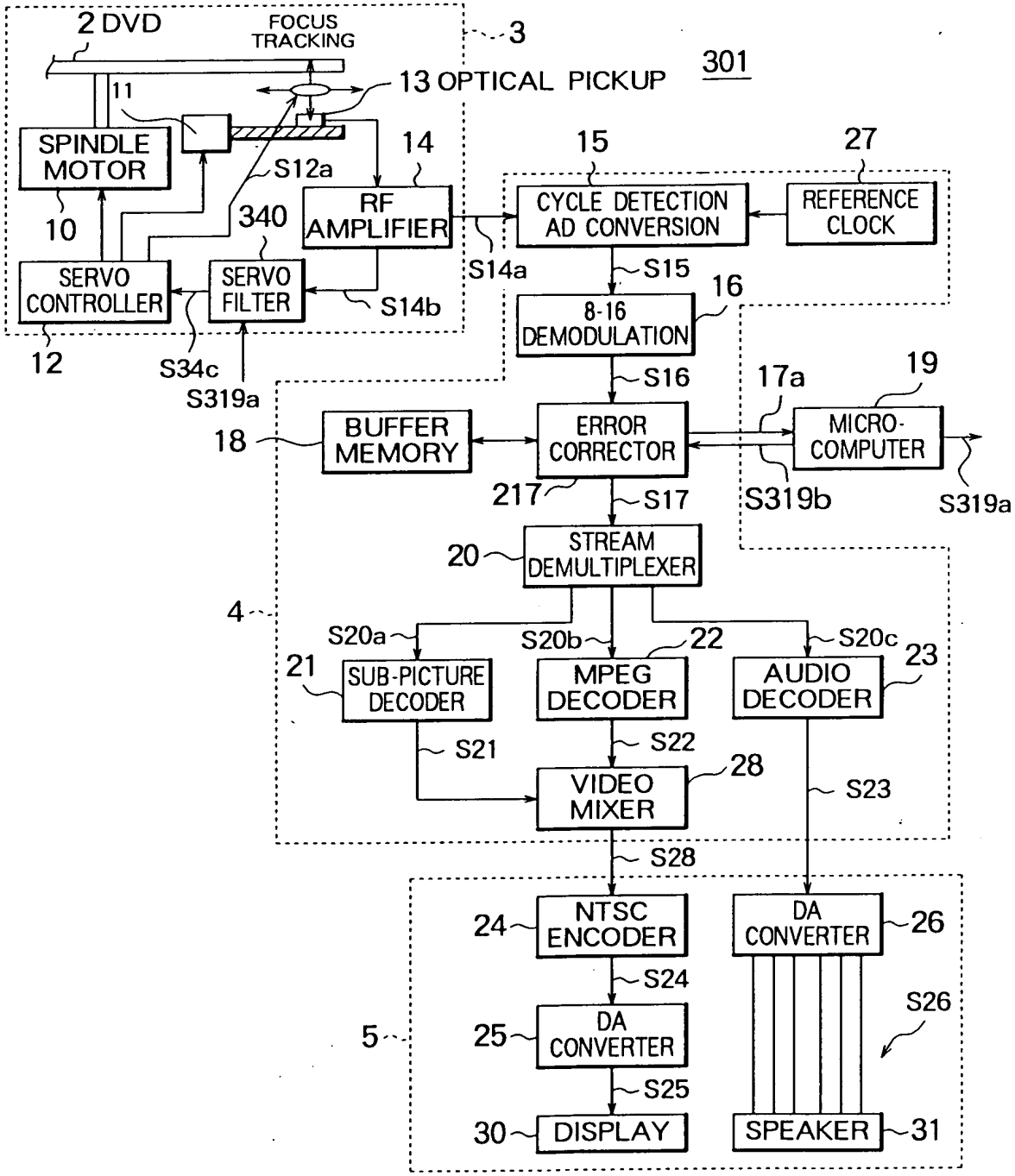

2 DVD
FOCUS
TRACKING
3
13 OPTICAL PICKUP
301
11
SPINDLE MOTOR
10
14
S12a
RF AMPLIFIER
340
SERVO CONTROLLER
SERVO FILTER
S14b
12
S34c
S319a
15
CYCLE DETECTION AD CONVERSION
27
REFERENCE CLOCK
S14a
S15
16
8-16 DEMODULATION
S16
17a
19
18
BUFFER MEMORY
ERROR CORRECTOR
MICRO-COMPUTER
217
S17
S319b
S319a
20
STREAM DEMULTIPLEXER
4
S20a
S20b
22
S20c
21
SUB-PICTURE DECODER
MPEG DECODER
AUDIO DECODER
23
S21
S22
28
VIDEO MIXER
S23
S28
24
NTSC ENCODER
DA CONVERTER
26
S24
S26
5
25
DA CONVERTER
S25
30
DISPLAY
SPEAKER
31

FIG. 13

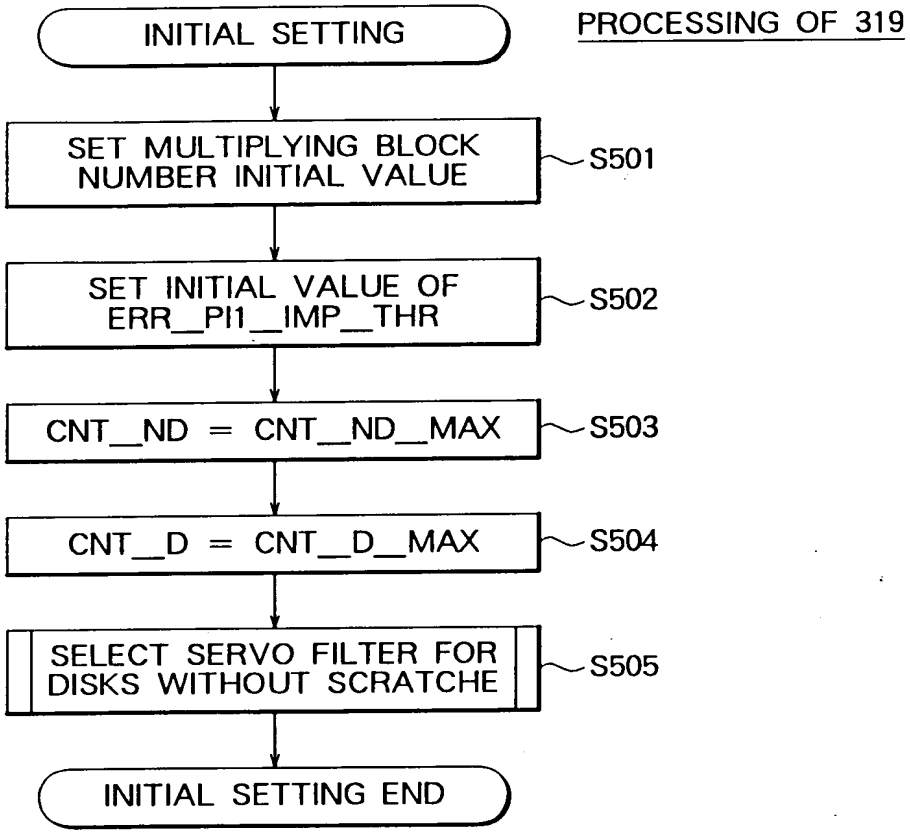

INITIAL SETTING
PROCESSING OF 319
SET MULTIPLYING BLOCK NUMBER INITIAL VALUE
S501
SET INITIAL VALUE OF ERR_PI1_IMP_THR
S502
CNT_ND = CNT_ND_MAX
S503
CNT_D = CNT_D_MAX
S504
SELECT SERVO FILTER FOR DISKS WITHOUT SCRATCHE
S505
INITIAL SETTING END

FIG. 14

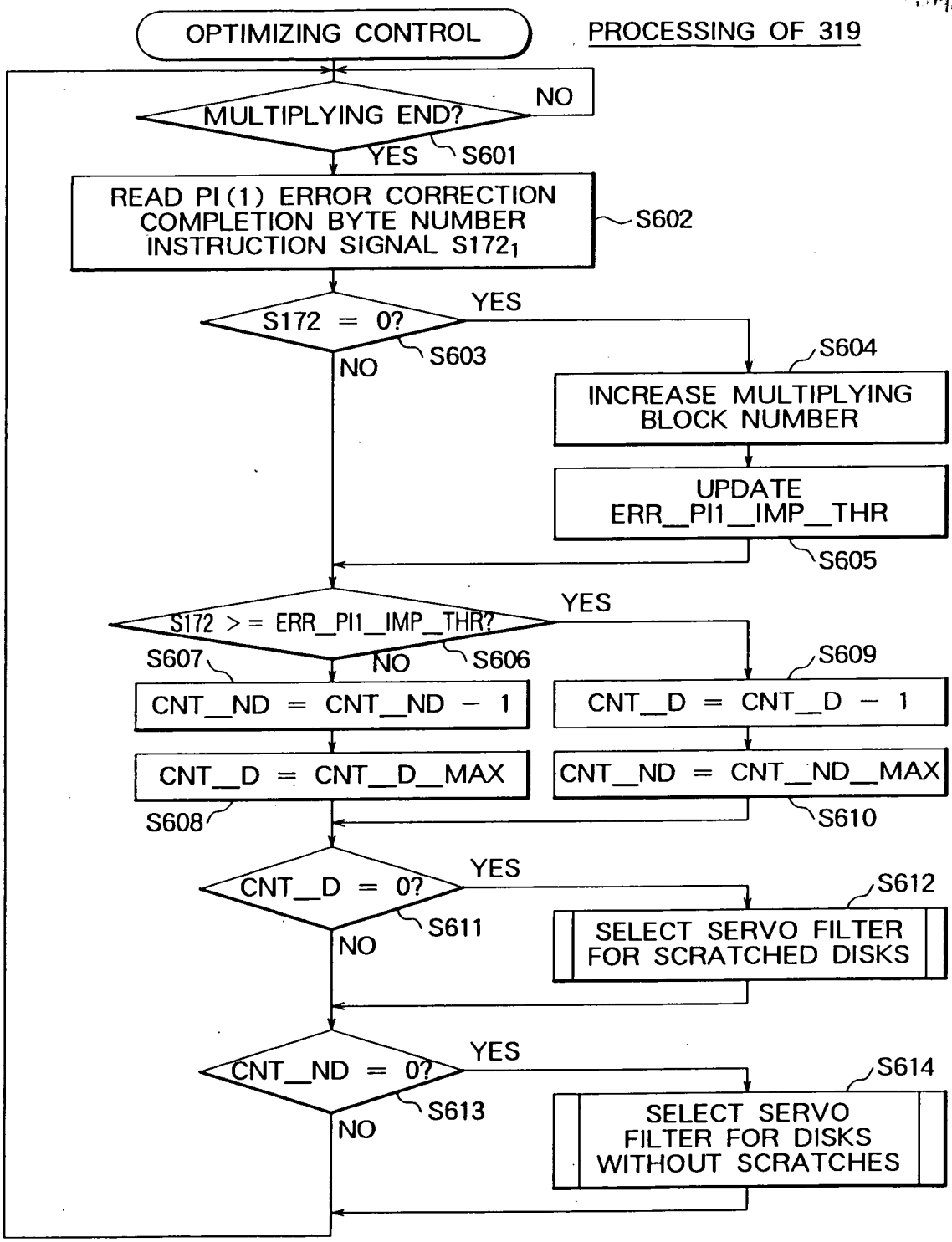
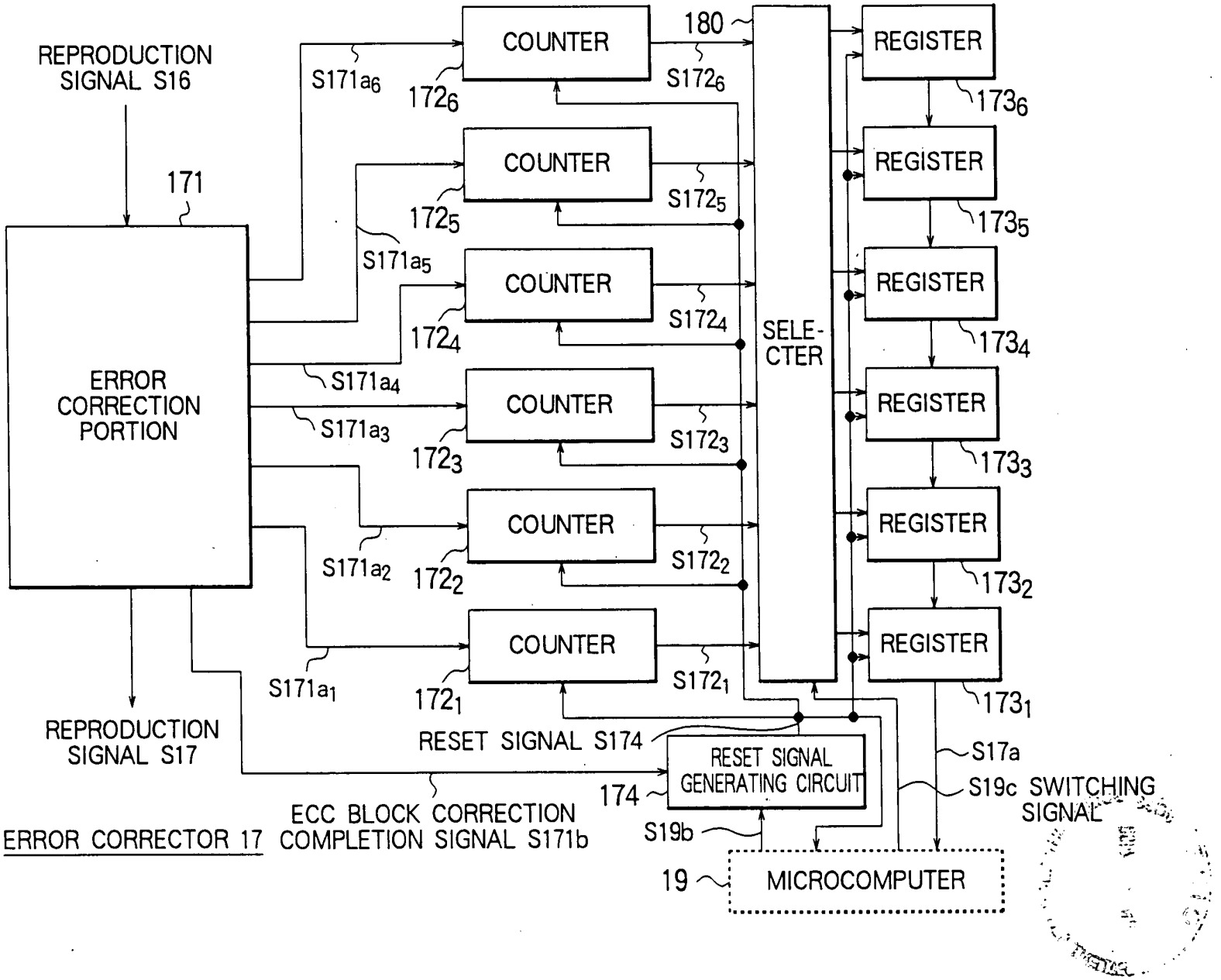

OPTIMIZING CONTROL
PROCESSING OF 319
MULTIPLYING END?
NO
YES
S601
READ PI(1) ERROR CORRECTION COMPLETION BYTE NUMBER INSTRUCTION SIGNAL S172₁
S602
S172 = 0?
YES
NO
S603
S604
INCREASE MULTIPLYING BLOCK NUMBER
UPDATE ERR_PI1_IMP_THR
S605
S172 >= ERR_PI1_IMP_THR?
YES
NO
S606
S607
CNT_ND = CNT_ND − 1
CNT_D = CNT_D_MAX
S608
S609
CNT_D = CNT_D − 1
CNT_ND = CNT_ND_MAX
S610
CNT_D = 0?
YES
NO
S611
S612
SELECT SERVO FILTER FOR SCRATCHED DISKS
CNT_ND = 0?
YES
NO
S613
S614
SELECT SERVO FILTER FOR DISKS WITHOUT SCRATCHES

FIG. 15


REPRODUCTION SIGNAL S16
171
ERROR CORRECTION PORTION
REPRODUCTION SIGNAL S17
ERROR CORRECTOR 17
ECC BLOCK CORRECTION COMPLETION SIGNAL S171b
S171a6
S171a5
S171a4
S171a3
S171a2
S171a1
COUNTER
1726
1725
1724
1723
1722
1721
180
S1726
S1725
S1724
S1723
S1722
S1721
SELE-CTER
REGISTER
1736
1735
1734
1733
1732
1731
RESET SIGNAL S174
RESET SIGNAL GENERATING CIRCUIT
174
S19b
19
MICROCOMPUTER
S17a
S19c SWITCHING SIGNAL